

What is claimed is:

1. A light source device comprising:

5 a semiconductor light emitting device array having a plurality of semiconductor light emitting devices arranged two-dimensionally on a substrate;

a condensing lens which converges light emitted from the semiconductor light emitting device array; and

10 a light guide in which a mirror surface is formed along an inner wall surface from a light incidence port to a light emission port and in which the semiconductor light emitting device array and the condensing lens are arranged in that order toward the light emission port inside the light incident port and whose part of the inner wall surface is
15 narrowed down substantially along a condensing angle of the condensing lens to emit the light converged by the condensing lens via the light emission port.

2. The light source device according to claim 1,
20 wherein the light guide comprises parallel inner wall surfaces facing each other and following a portion obtained by narrowing down a part of the inner wall surface in order to emit the light (or color light) converged by the condensing lens while repeatedly reflecting the light by the mirror
25 surface.

3. A projection type display unit comprising:

the light source device according to claim 1;

30 an image display part optical system which irradiates an image display device with the light (or color light) emitted from the light source device; and

a projection part optical system which projects an image light displayed on the image display device.

4. A light source device comprising:

a dichroic prism having first and second dichroic mirrors which are formed intersecting with each other therein;

5 semiconductor light emitting device arrays for three colors, which are respectively arranged to face three side surfaces of the dichroic prism crossing one another at right angles, each array including a substrate and a plurality of semiconductor light emitting devices that are
10 two-dimensionally arranged on the substrate and emit the light of each color of the three colors;

a condensing lens that condenses respective color lights which are emitted from the semiconductor light emitting device arrays for three colors and whose wavelength
15 bands are selected by the first and second dichroic mirrors via the dichroic prism; and

a light guide in which a mirror surface is formed from a light incidence port to a light emission port along an inner wall surface and in which the dichroic prism is disposed in
20 the vicinity of the light incidence port and in which the condensing lens is disposed inside the light incidence port and which emits the respective color lights obtained by narrowing down a part of the inner wall surface substantially along a condensing angle of the condensing lens and
25 condensing the respective color lights by the condensing lens via the light emission port.

5. The light source device according to claim 4, wherein the light guide comprises parallel inner wall
30 surfaces facing each other and following a portion obtained by narrowing down a part of the inner wall surface in order to emit the light (or the respective color lights) converged by the condensing lens while repeatedly reflecting the light by the mirror surface.

6. A projection type display unit comprising:
the light source device according to claim 4;
an image display part optical system which irradiates
5 an image display device with the light (or the respective
color lights) emitted from the light source device; and
a projection part optical system which projects an
image light displayed on the image display device.

10 7. A projection type display unit comprising:
a semiconductor light emitting device array having a
plurality of semiconductor light emitting devices arranged
two-dimensionally on a substrate;
a toroidal lens which converges light emitted from the
15 semiconductor light emitting device array;
a light guide in which a mirror surface is formed from
a light incidence port to a light emission port along an inner
wall surface and in which the semiconductor light emitting
device array and the toroidal lens are arranged in that order
20 toward the light emission port inside the light incidence
port and in which the light obtained by narrowing down a part
of the inner wall surface substantially along a condensing
angle of the toroidal lens and converging the light by the
toroidal lens is emitted from the light emission port;
25 an image display part optical system which irradiates
an image display device with the light emitted from the light
emission port side of the light guide; and
a projection part optical system which projects an
image light displayed on the image display device,
30 wherein a horizontal direction component of an aspect
ratio of the semiconductor light emitting device array is set
to be larger than that of an aspect ratio of the image display
device, and the aspect ratio on the light emission port side
of the light guide is converted by the toroidal lens to be

substantially matched with the aspect ratio of the image display device.